Claims

1. (Currently Amended) An ~~immunogenic composition comprising an isolated PAGE-4 protein~~ isolated polypeptide comprising

(a) an amino acid sequence set forth as SEQ ID NO: 1; or

(b) 8 to 11 contiguous amino acids of SEQ ID NO: 1, wherein the peptide binds major histocompatibility complex (MHC) I.

2. (Currently Amended) An immunogenic composition comprising the isolated polypeptide of claim 1, ~~further comprising~~ and a pharmaceutically acceptable carrier.

3. (Currently Amended) ~~An immunogenic composition~~ The isolated polypeptide of claim 1, wherein the polypeptide consists essentially of ~~comprising an isolated peptide of a PAGE-4 protein, wherein said peptide binds with an MHC molecule~~ 8 to 11 contiguous amino acids of SEQ ID NO: 1, and wherein the polypeptide binds major histocompatibility complex (MHC) I.

4. (Currently Amended) An immunogenic composition comprising the isolated polypeptide of claim 3, ~~further comprising~~ and a pharmaceutically acceptable carrier.

5. (Currently Amended) ~~An immunogenic composition~~ The isolated polypeptide of claim [[3]] 1, wherein the isolated peptide consists of nine to ~~eleven~~ ten contiguous amino acids of SEQ ID NO: 1, wherein the polypeptide bind major histocompatibility complex (MHC) I.

6. (Currently Amended) ~~An immunogenic composition~~ The isolated polypeptide of claim [[4]] 3, wherein the isolated polypeptide is conjugated to a lipid.

7. (Currently Amended) ~~An~~ The immunogenic composition of claim [[1]] 2, further comprising two or more of a stabilizing detergent, a micelle-forming agent, and an oil.

8. (Currently Amended) ~~An~~ The immunogenic composition of claim [[3]] 4, further comprising two or more of a stabilizing detergent, a micelle-forming agent, and an oil.

9. (Currently Amended) An ~~immunogenic composition comprising an~~ isolated nucleic acid encoding ~~a PAGE-4 protein~~ encoding the polypeptide of claim 1.

10. (Currently Amended) An immunogenic composition comprising the isolated nucleic acid of claim 9, loaded on a gold microsphere.

11. (Currently Amended) ~~An immunogenic composition of claim 9, wherein the isolated nucleic acid further comprises~~ The isolated nucleic acid of claim 9, operably linked to a heterologous promoter.

12. (Currently Amended) An immunogenic composition comprising

[[an]] a therapeutically effective amount of an isolated nucleic acid encoding the polypeptide of claim 1, wherein the nucleic acid encodes a polypeptide consisting essentially of eight to eleven ~~or more~~ contiguous amino acids of ~~a PAGE-4 protein or conservative modifications thereof~~ an amino acid sequence set forth as SEQ ID NO: 1, wherein the polypeptide binds major histocompatibility complex (MHC) I; and

a pharmaceutically acceptable carrier.

13. (Canceled).

14. (Currently Amended) A method for inhibiting the growth of a malignant cell expressing PAGE-4, comprising,

[[(i)]](a) culturing cytotoxic T lymphocytes (CTLs) or CTL precursor cells with the polypeptide of claim 1, ~~a PAGE-4 protein or an immunogenic PAGE-4 peptide~~, thus activating the CTLs or CTL precursors ~~to recognize a PAGE-4 expressing cell,~~; and

[[(ii)]](b) contacting the malignant cell with the activated CTLs or CTLs matured from the CTL precursors, thereby inhibiting the growth of the malignant cell.

15. (Currently Amended) A method for inhibiting the growth of a malignant cell expressing PAGE-4 in a mammal with a malignancy comprising PAGE-4-expressing cells, the method comprising,

[[(i)]](a) obtaining cytotoxic T lymphocytes (CTLs) or CTL precursor cells from the mammal[[,]];

[[(ii)]](b) culturing the CTLs or CTL precursors with ~~a PAGE-4 protein or an immunogenic PAGE-4 peptide~~ the polypeptide of claim 3, thus activating the CTLs or CTL precursors ~~to recognize a PAGE-4 expressing cell,~~; and

[[(iii)]](c) introducing the activated CTLs or CTL precursors into the mammal, thereby inhibiting the growth of the malignant cell.

16. (Currently Amended) A method for inhibiting the growth of a malignant cell expressing PAGE-4 in a mammal with a malignancy comprising PAGE-4-expressing cells, the method comprising,

[[(i)]](a) obtaining antigen presenting cells (APCs) and cytotoxic T lymphocytes (CTLs) or CTL precursor cells from the mammal[[,]];

[[(ii)]](b) transducing the APCs with[[a]] the nucleic acid encoding the polypeptide of claim 1 ~~a PAGE-4 protein or an immunogenic PAGE-4 peptide,~~;

[[(iii)]](c) culturing the APC with the CTLs or CTL precursors, thus activating the CTLs or CTL precursors to recognize a PAGE-4-expressing cell [[,]]; and

[[(iv)]](d) introducing the activated CTLs or CTL precursors into the mammal, thereby inhibiting the growth of the malignant cell.

17. (Currently Amended) A method for inhibiting the growth of a malignant cell expressing PAGE-4 in a mammal with a malignancy comprising PAGE-4-expressing cells, the method comprising, ~~introducing into the mammal a PAGE-4 protein or immunogenic PAGE-4 peptides in an amount sufficient to induce activation of cytotoxic T lymphocytes against PAGE-4 expressing cells,~~ administering to the mammal a therapeutically effective amount of the immunogenic composition of claim 2, thereby inhibiting the growth of the malignant cell.

18. (Currently Amended) A method for inhibiting the growth of a malignant cell expressing PAGE-4 in a mammal with a malignancy comprising PAGE-4-expressing cells, the method comprising, ~~introducing into~~ administering to the mammal ~~nucleic acids encoding PAGE-4 protein or an immunogenic PAGE-4 peptide, whereby the nucleic acids are expressed in cells of the mammal, thereby activating a cytotoxic T lymphocyte response to cells expressing PAGE-4,~~ a therapeutically effective amount of the immunogenic composition of claim 4, thereby inhibiting the growth of the malignant cell.

19-51. (Canceled).

52. (New) The isolated polypeptide of claim 1, comprising an amino acid sequence set forth as SEQ ID NO: 1.

53. (New) An isolated polypeptide consisting of 8 to 11 contiguous amino acids of SEQ ID NO: 1, wherein the polypeptide binds major histocompatibility complex (MHC) I .

54. (New) The isolated polypeptide of claim 1, wherein the polypeptide is 9 to 10 amino acids in length.

55. (New) The isolated polypeptide of claim 53, wherein the polypeptide binds HLA-A1, HLA-A2.1, HLA-A3.2, HLA-A4.1 or HLA-A11.2.

56. (New) The isolated polypeptide of claim 54, conjugated to a lipid.

57. (New) An isolated polynucleotide encoding the polypeptide of claim 52.

58. (New) The isolated polynucleotide of claim 57, operably linked to a promoter.

59. (New) A vector comprising the isolated polynucleotide of claim 58.